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Val Ser Val Gln Trp Lys Lys Thr Glu Gln Gly Ser His Arg Lys Ile 50 55 60

Glu Ile Leu Asn Trp Tyr Asn Asp Gly Pro Ser Trp Ser Asn Val Ser 65 70 75 80

Phe Ser Asp Ile Tyr Gly Phe Asp Tyr Gly Asp Phe Ala Leu Ser Ile 85 90 95

Lys Ser Ala Lys Leu Gln Asp Ser Gly His Tyr Leu Leu Glu Ile Thr 100 105 110

Asn Thr Gly Gly Lys Val Cys Asn Lys Asn Phe Gln Leu Leu Ile Leu 115 120 125

Asp His Val Glu Thr Pro Asn Leu Lys Ala Gln Trp Lys Pro Trp Thr 130 135 140

Asn Gly Thr Cys Gln Leu Phe Leu Ser Cys Leu Val Thr Lys Asp Asp 145 150 155 160

Asn Val Ser Tyr Ala Phe Trp Tyr Arg Gly Ser Thr Leu Ile Ser Asn 165 170 175

Gln Arg Asn Ser Thr His Trp Glu Asn Gln Ile Asp Ala Ser Ser Leu 180 185 190

His Thr Tyr Thr Cys Asn Val Ser Asn Arg Ala Ser Trp Ala Asn His 195 200 205

Thr Leu Asn Phe Thr His Gly Cys Gln Ser Val Pro Ser Asn Phe Arg 210 215 220

Phe Leu Pro Phe Gly Val Ile Ile Val Ile Leu Val Thr Leu Phe Leu 225 230 235 240

Gly Ala Ile Ile Cys Phe Cys Val Trp Thr Lys Lys Arg Lys Gln Leu 245 250 255

Gln Phe Ser Pro Lys Glu Pro Leu Thr Ile Tyr Glu Tyr Val Lys Asp

260 265 270

Ser Arg Ala Ser Arg Asp Gln Gln Gly Cys Ser Arg Ala Ser Gly Ser 275 280 285

Pro Ser Ala Val Gln Glu Asp Gly Arg Gly Gln Arg Glu Leu Asp Arg 290 295 300

Arg Val Ser Glu Val Leu Glu Gln Leu Pro Gln Gln Thr Phe Pro Gly 305 310 315 320

Asp Arg Gly Thr Met Tyr Ser Met Ile Gln Cys Lys Pro Ser Asp Ser 325 330 335

Thr Ser Gln Glu Lys Cys Thr Val Tyr Ser Val Val Gln Pro Ser Arg 340 345 350

Lys Ser Gly Ser Lys Lys Arg Asn Gln Asn Tyr Ser Leu Ser Cys Thr 355 360 365

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Asp Ser Ile Ala Trp Lys Lys Leu Leu Pro Ser Gln Asn Gly Phe His
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                         55
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Asp Arg Phe Ser Phe Ile Val Lys Asn Leu Ser Leu Leu Ile Lys Ala
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Ala Gln Gln Asp Ser Gly Leu Tyr Cys Leu Glu Val Thr Ser Ile
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                                                     110
Ser Gly Lys Val Gln Thr Ala Thr Phe Gln Val Phe Val Phe Asp Lys
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                                                 125
Val Glu Lys Pro Arg Leu Gln Gly Gln Gly Lys Ile Leu Asp Arg Gly
Arg Cys Gln Val Ala Leu Ser Cys Leu Val Ser Arg Asp Gly Asn Val
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Ser Tyr Ala Trp Tyr Arg Gly Ser Lys Leu Ile Gln Thr Ala Gly Asn
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Thr Cys Asn Val Ser Asn Pro Val Ser Trp Glu Ser His Thr Leu Asn
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Leu Thr Gln Asp Cys Gln Asn Ala His Gln Glu Phe Arg Arg Ser Cys
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Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Ala Glu Gly
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Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val 275 280 285

His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr 290 295 300

Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly 305 310 315 320

Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile 325 330 335

Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val 340 345 350

Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser 355 360 365

Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu 370 375 380

Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro 385 390 395 400

Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val 405 410 415

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met 420 425 430

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Asp Ser Ile Ala Trp Lys Lys Leu Leu Pro Ser Gln Asn Gly Phe His
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His Ile Leu Lys Trp Glu Asn Gly Ser Leu Pro Ser Asn Thr Ser Asn
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Asp Arg Phe Ser Phe Ile Val Lys Asn Leu Ser Leu Leu Ile Lys Ala
                                      90
Ala Gln Gln Gln Asp Ser Gly Leu Tyr Cys Leu Glu Val Thr Ser Ile
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Ser Gly Lys Val Gln Thr Ala Thr Phe Gln Val Phe Val Phe Asp Lys
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Val Glu Lys Pro Arg Leu Gln Gly Gln Gly Lys Ile Leu Asp Arg Gly
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Arg Cys Gln Val Ala Leu Ser Cys Leu Val Ser Arg Asp Gly Asn Val
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Ser Tyr Ala Trp Tyr Arg Gly Ser Lys Leu Ile Gln Thr Ala Gly Asn
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Leu Thr Tyr Leu Asp Glu Glu Val Asp Ile Asn Gly Thr His Thr Tyr
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Thr Cys Asn Val Ser Asn Pro Val Ser Trp Glu Ser His Thr Leu Asn
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Ser Gly Val Pro Leu Gln Leu Gln Pro Asn Ser Ile Gln Thr Lys Val 35 40 45

Asp Ser Ile Ala Trp Lys Lys Leu Leu Pro Ser Gln Asn Gly Phe His 50 55 60

His Ile Leu Lys Trp Glu Asn Gly Ser Leu Pro Ser Asn Thr Ser Asn 65 70 75 80

Asp Arg Phe Ser Phe Ile Val Lys Asn Leu Ser Leu Leu Ile Lys Ala 85 90 95 Ala Gln Gln Asp Ser Gly Leu Tyr Cys Leu Glu Val Thr Ser Ile Ser Gly Lys Val Gln Thr Ala Thr Phe Gln Val Phe Val Phe Asp Lys Val Glu Lys Pro Arg Leu Gln Gly Gln Gly Lys Ile Leu Asp Arg Gly Arg Cys Gln Val Ala Leu Ser Cys Leu Val Ser Arg Asp Gly Asn Val 150 145 Ser Tyr Ala Trp Tyr Arg Gly Ser Lys Leu Ile Gln Thr Ala Gly Asn 165 170 Leu Thr Tyr Leu Asp Glu Glu Val Asp Ile Asn Gly Thr His Thr Tyr 185 190 180 Thr Cys Asn Val Ser Asn Pro Val Ser Trp Glu Ser His Thr Leu Asn 200 Leu Thr Gln Asp Cys Gln Asn Ala His Gln Glu Phe Arg Arg Ser Gly 215 220 Ser Ser Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Leu Ser 230 235 240 Lys Ile Tyr His Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile 250 255 Gly Glu Arg Gly Thr Ser Ser Arg Gly Ser His His His His His His 260 265 270

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Leu Pro Glu Asn Tyr Lys Gln Leu Thr Trp Phe Tyr Thr Phe Asp Gln
50 60

Lys Ile Val Glu Trp Asp Ser Arg Lys Ser Lys Tyr Phe Glu Ser Lys 65 70 75 80

Phe Lys Gly Arg Val Arg Leu Asp Pro Gln Ser Gly Ala Leu Tyr Ile 85 90 95

Ser Lys Val Gln Lys Glu Asp Asn Ser Thr Tyr Ile Met Arg Val Leu 100 105 110

Lys Lys Thr Gly Asn Glu Gln Glu Trp Lys Ile Lys Leu Gln Val Leu 115 120 125

Asp Pro Val Pro Lys Pro Val Ile Lys Ile Glu Lys Ile Glu Asp Met 130 135 140

Asp Asp Asn Cys Tyr Leu Lys Leu Ser Cys Val Ile Pro Gly Glu Ser 145 150 155 160

Val Asn Tyr Thr Trp Tyr Gly Asp Lys Arg Pro Phe Pro Lys Glu Leu 165 170 175

Gln Asn Ser Val Leu Glu Thr Thr Leu Met Pro His Asn Tyr Ser Arg 180 185 190

Cys Tyr Thr Cys Gln Val Ser Asn Ser Val Ser Ser Lys Asn Gly Thr 195 200 205

Val Cys Leu Ser Pro Pro Cys Thr Leu Ala Arg Ser Phe Gly Val Glu 210 215 220



Trp Ile Ala Ser Trp Leu Val Val Thr Val Pro Thr Ile Leu Gly Leu 225 230 235 240

Leu Leu Thr